

REMARKS

Claims 1-3 and 11-13 are now pending in the application. The following remarks are believed to be fully responsive to the outstanding Office Action and are believed to place the application in condition for allowance. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

Claims 1-3 and 11-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Adonakis (U.S. Pat. No. 6,499,954) in view of Atkinson (U.S. Pat. No. 2,819,012). This rejection is respectfully traversed.

At the outset, Applicant notes that claims 1 and 11 recite “an impeller comprising: a plurality of blades... having a surface defined by an axial direction (Z), a radius (R)... and a polar angle (Θ)... including an inducer... including a height component in said axial direction (Z) that is substantially five to seven percent of an outer diameter of said impeller.” Applicant submits that none of the cited prior art references disclose an inducer including a height component in an axial direction (Z) that is substantially five to seven percent of an outer diameter of the impeller, as claimed.

As the Examiner acknowledges, Adonakis does not disclose the use of the inducer. Atkinson discloses a rotor that comprises an inducer portion and an impeller portion. Col. 2, Lines 23-24. Atkinson further discloses that the axial length of the inducer portion may be limited by the allowable overall length of the rotor and machine tool requirements. Col. 3, Line 69 - Col. 4, Line 17. The axial length referred to in Atkinson is equivalent in direction to the height component in an axial direction (Z)

referred to in the instant application. Thus, Atkinson discloses an inducer including a height component that may be limited by the allowable overall height of the rotor. Atkinson does not disclose an inducer including a height component in an axial direction (Z) that is limited by an outer diameter of the rotor or impeller.

Moreover, as the Examiner acknowledges, Atkinson does not disclose an inducer including a height component in an axial direction (Z) that is substantially five to seven percent of an outer diameter of the impeller, as claimed. In fact, the teachings of Atkinson lead away from the claimed inducer height. “A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention.” MPEP §2141.03. Atkinson discloses that air is accelerated tangentially in the inducer and the air is accelerated tangentially and radially in the impeller. Col. 1, Lines 19-24. Atkinson further discloses that the axial length of the inducer should be made such that tangential acceleration in the inducer approximately equals that in the impeller. Col. 4, Lines 28-31 and Fig. 1. Thus, Atkinson teaches an inducer including an axial length that is equal to the axial length of the impeller such that tangential acceleration in the inducer approximately equals that in the impeller.

The Examiner indicates that the element of “an inducer... includes a height component in said axial direction (Z) that is substantially five to seven percent of an outer diameter of said impeller” does not solve any stated problem or is useful for any particular purpose because the specification does not clearly indicate this element is required. The Examiner notes that the summary of the invention does not refer to the inducer having a height of 5 to 7% of the outer diameter of the impeller and the specification does not state that such a range is critical to the operation of the invention.

Applicant acknowledges that MPEP §2107.02(II) requires the specification to assert that the claimed invention is useful for a particular purpose. However, Applicant reiterates that the specification of the instant application states that three elements must be met “[t]o ensure that a received fluid stream remains attached to the impeller blades 14 under any flow condition,” thereby preventing surge, and one of these three elements is that “the length of the inducer, or height of the leading edge 26 in the axial direction (Z), should be within 5% to 7% of the outer diameter of the impeller 10.” Paragraphs [0042]-[0044]. “In most cases, an applicant’s assertion of utility creates a presumption of utility that will be sufficient to satisfy the utility requirement of 35 U.S.C. 101.” MPEP §2107.02(III). Thus, Applicant submits that a presumption has been created regarding the usefulness of the above element in preventing surge.

In addition, 37 CFR 1.73 simply states that the summary should be commensurate with the invention as claimed and any object recited should be that of the invention as claimed. 37 CFR 1.73 does not require that the summary state every element of the claimed invention. Thus, while the summary does not refer to an inducer having a height of 5 to 7% of the outer diameter of the impeller, the summary satisfies 37 CFR 1.73 since it is commensurate with an inducer having a height of 5 to 7% of the outer diameter of the impeller. Moreover, MPEP §2163.05(I) states that a claim that omits an element which applicant describes as an essential or critical feature of the invention originally disclosed does not comply with the written description requirement. MPEP §2163 does not indicate that the specification must state that a claim element is an essential or critical feature of the invention.

The Examiner also indicates that the element of a vaneless diffuser does not solve any stated problem or is for any particular purpose because claims 11-13 do not require this limitation. Applicant reiterates that this limitation is beyond the scope of claims 11-13, as claims 11-13 are concerned with an impeller rather than a compressor.

Accordingly, Applicant submits that none of the cited references disclose all of the limitations of claims 1 and 11. In addition, claims 2-3 and claims 12-13 depend from claims 1 and 11, respectively. Therefore, reconsideration and withdrawal of the rejection of claims 1-3 and 11-13 are respectfully requested.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: July 10, 2008

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